

Abstract

A depth of interaction detector with uniform pulse-height comprises a multi-layer scintillator obtained by coupling at least two scintillator cells on a plane and then stacking the planar coupled scintillator cells, in layers, up to at least two stages and a light-receiving element connected to the bottom face of each scintillator cell of this multi-layer scintillator, wherein the detector is provided with a means for discriminating the position of a scintillator cell, which receives radiant rays and emits light rays and a means for making, uniform, the quantity of the light emitted from each scintillator cell and received by the light-receiving element. The detector can provide precise detection information even when radiation is absorbed by and emitted from a scintillator layer positioned above the scintillator layer optically coupled to the light-receiving element, permits the production of a depth of interaction detector having a three-dimensional depth of interaction-detecting function and can provide the same total output signal, which is independent of the position or a specific scintillator cell practically emitting light if the radiation energy is identical.